

The Swiss polar science landscape

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The Swiss-International science landscape

a recipe for success



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A few thoughts to start with

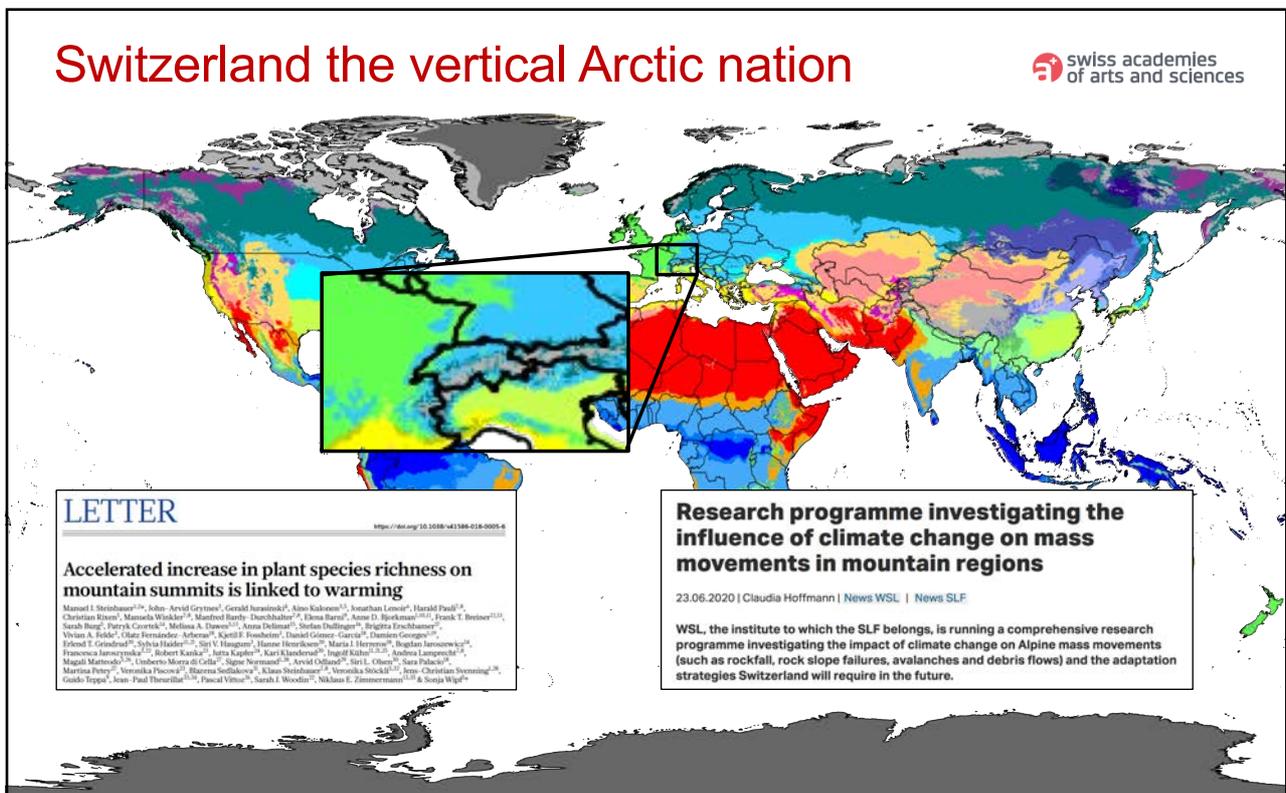
- the polar regions are hotspots of global change
- the interconnectedness of polar change (climate, ecosystems, societies) requires interdisciplinary research
- the complexity of polar science and logistics requires transnational research collaboration
- Switzerland brings in expertise in many fields of global change and polar research and is a sought-after partner in international projects
- Switzerland has no permanent polar infrastructure (stations, vessels, aircraft) but is renowned for (polar) technology and automation
- Switzerland, as a vertical polar nation, has a vested interest in all aspects of polar research



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Switzerland the vertical Arctic nation

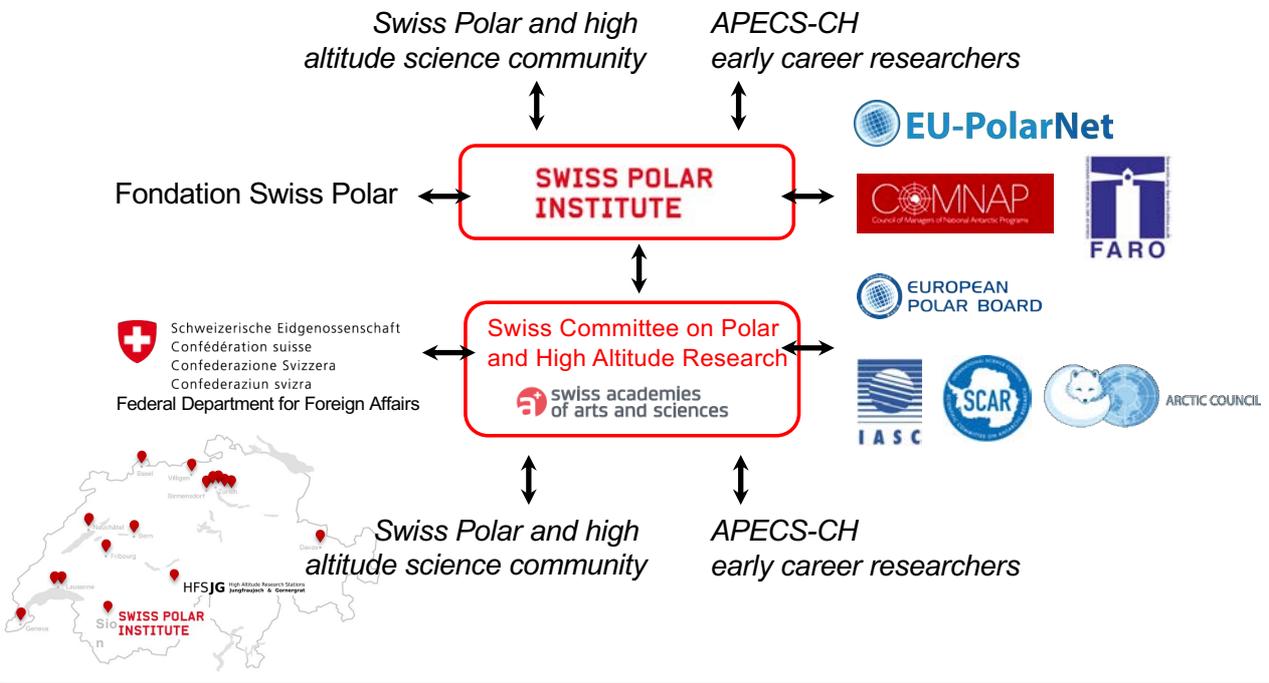
swiss academies of arts and sciences



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The Swiss polar science landscape

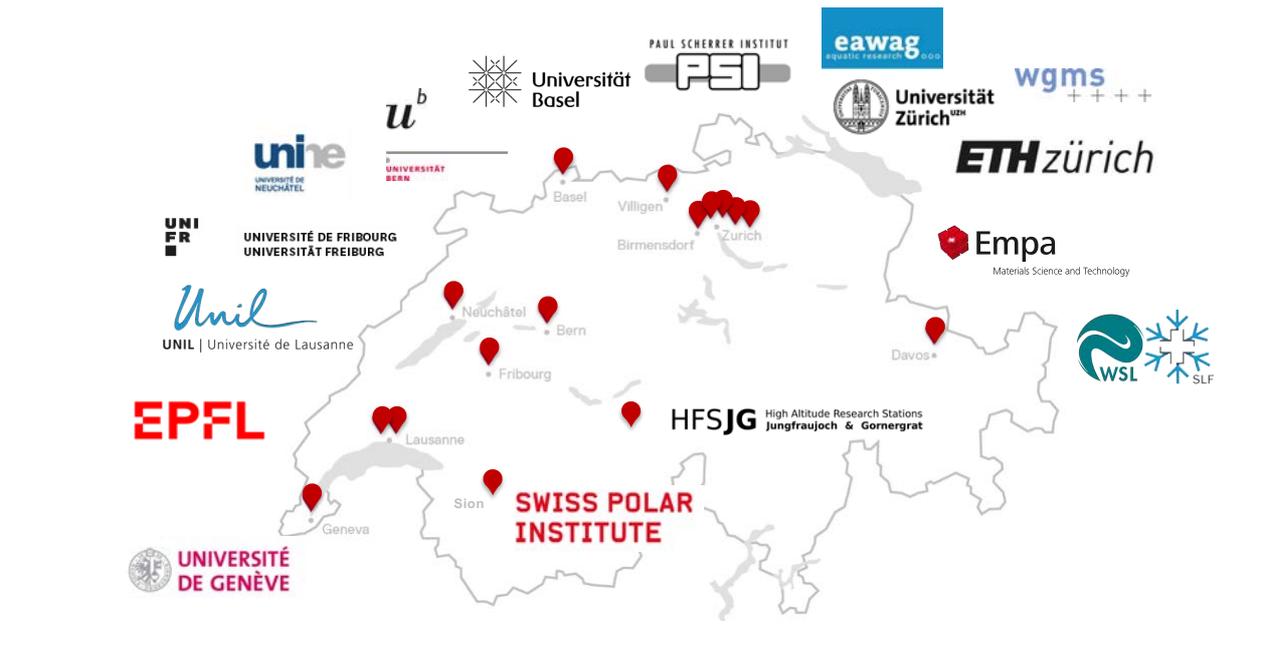
swiss academies of arts and sciences



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Swiss polar research community

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The nature of Swiss polar research



- High expertise in a very broad range of topics from cryosphere sciences, geology, biology/biodiversity, climate and atmospheric sciences, marine sciences, science history, policy...
- synergistic research and access through large scale international collaborations
- comparative science in high altitude regions – the Arctic at the doorstep
- Swiss research is often technology driven – high expertise in technological development, engineering, modeling and “remote sensing”

... a few examples (not exhaustive)

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1 – Multidisciplinary drifting Observatory for the Study of Arctic Climate



MOSAIC

Canada, Russia, Greenland, Europe

ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR-UND MEERESFORSCHUNG

Austria	Belgium	Canada	China	Denmark
Finland	France	Germany	Great Britain	Italy
Japan	Korea	Netherlands	Norway	Poland
Russia	Spain	Sweden	Switzerland	USA

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2 - Antarctic Circumnavigation Expedition



22 PROJECTS
From 6 continents



1 EXPEDITION
Around Antarctica



150 INVESTIGATORS
On 1 boat



**SWISS POLAR
INSTITUTE** 



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3 – EU Project: Drivers and Feedbacks of Changes in Arctic Terrestrial Biodiversity



Universität
Zürich™

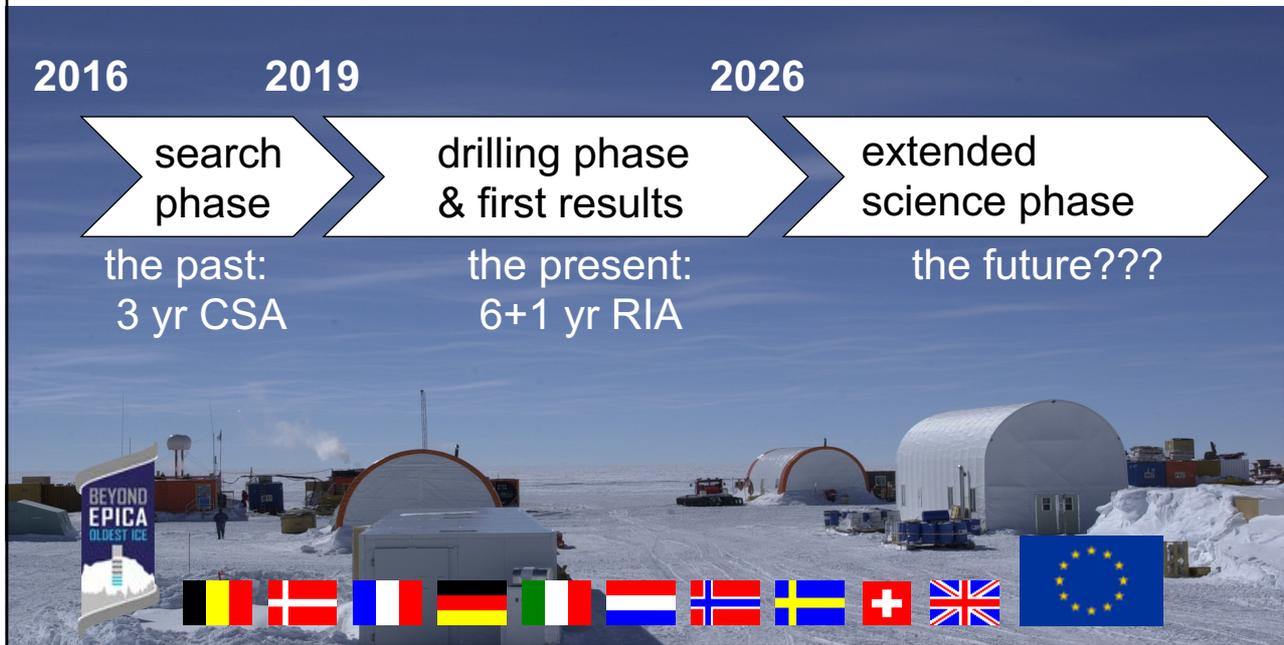


 **CHARTER**

Interdisciplinary Arctic biodiversity study with partners from Finland, Norway, U.K., Austria, Iceland, Switzerland, Germany, Denmark, Sweden, China

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4 - Beyond EPICA – Oldest Ice Core Drilling a 1.5 Myr old ice core in Antarctica



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Beyond EPICA – Logistics

The map highlights the logistics route from the Concordia station (marked with a white star) to the Cap Prud'Homme and Mario Zucchelli sites (marked with red dots). Several inset images show logistical operations: an airplane in flight, a train of supply sleds being pulled across the ice, an airplane on the ground, and a ship in the water.

ca. 3000 mandays in the field
 air cargo: 22 t
 fuel: 100 m³
 cargo traverse: 80 t
 total budget: EU 11 M€ + SNF 3 M€ + in kind contributions ≈ 30 M€

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Beyond EPICA – Science

temperature & precipitation
greenhouse gases and their sources
mean ocean temperature
sea ice coverage, desert dust, marine productivity
continental weathering
solar activity and geomagnetic anomalies
ice sheet altitude, ...

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5 – High Altitude Research Station Jungfrauoch (3571 m) – a unique infrastructure

HFSJG High Altitude Research Stations
Jungfrauoch & Gornergrat

International Foundation members: Switzerland, Austria, Belgium, Germany, the U.K., Finland & China

Continuous analyses of the state of the atmosphere, the cryosphere combined with dedicated campaigns by international institutions

www.hfsjg.ch

ICOS
NDACC
GAW

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The Future – the Swiss national APECS committee



<https://apecsswitzerland.wixsite.com/home>



WHAT IS APECS?



The Association of Polar Early Career Scientists is an organization that aims to simulate interdisciplinary and international research collaboration on polar and cryospheric sciences. For this, APECS tries to:

- Facilitate international and interdisciplinary networking
- Provide opportunities for professional career development
- Promote education

FOR WHO?



For all young researchers, from undergraduate students to early faculty members, and all other people that are interested to follow what is happening in the Polar regions and the wider cryosphere.

If you are looking for new collaboration, useful advices for your project/career, the creation of a new working group, help in your educational program, expanding your network at social events or conferences, etc. APECS is for you!

OUR AIMS



Our goal is to regroup the scientific community working on polar region and cryosphere related topics in Switzerland and encourage international collaboration and networking.

- For this, we:
- Set up a list of mentors and professors to whom you can address questions,
 - Set up a list of events where young scientists can gather, share experiences and ideas
 - Publish news of projects/findings happening in our country.

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A few thoughts to end with

- Switzerland has high expertise in climate science, glaciology and snow research, in ecology, biodiversity and biogeochemical research, in atmospheric research, atmosphere and ocean modeling, in marine and terrestrial geology, ...
- Switzerland has no polar infrastructure (stations, vessels, aircraft) but can bring in new technologies, modeling and remote observation approaches
- Swiss polar research relies on fruitful synergistic collaborations with international partners
- **The new SPI flagship initiatives provide opportunities for such international collaborative bottom-up research at selected sites in polar or high-altitude regions (proposals pending...)**



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